What happens in the brain of actors who are in character?

To brain or not to brain, that is the question

We have discussed what happens within the brain during lying, but what happens inside the brain of a professional liar? A professional who pretends to be other people for a living. In fact, some have become so good that they have even earned awards and worldwide fame!

Acting is a sort of unicorn regarding brain activity because it sits in a grey area between truthfulness and lying. It's not really lying in the classical sense of the word; it's more of an exaggeration for our entertainment. That just means that the brain is doing something we haven't seen before, and it's going to be absolutely thrilling to find out.

Let's rewind to 2019 when a groundbreaking study, unlike any other, utilised fMRI scans to observe the brains of 15 actors before and after they transformed themselves into Shakespearean characters (a method we call between-subject testing)[164]. This unique approach opened a new frontier in our understanding of the actor's brain and applying neuroscientific analysis in the real-world.

The Canadian team first had to obtain baseline measurements to observe the brain when the actor was their authentic selves and not 'in character'. To do this, the researchers first asked each actor questions and instructed them to respond as themselves - no acting required. Next, the actors were then given as much time as needed to get into character before hopping back into the MRI machine. Once more, they were asked hypothetical

questions about what they might do in specific situations or what they might say. The questions were hypothetical, so they didn't require any factual knowledge of Shakespeare or anything that would use outside knowledge. It was more about taking over the mindset of another character and responding as they might respond. The actual answers didn't really matter, just that the actor was immersed in their character at the time. This gave the researchers a comparison of the neurological processes that occur when a person responds to questions as themselves or as a character.

Figure. These may just seem like curious little studies, but they can tell us a lot about how the brain functions during different types of communication, and also improve our understanding of empathy and theory of mind.

The researchers had struck acting gold. The brain scans revealed intriguing differences that had never been seen before. They observed that when an actor was in character, areas of the

brain involved in self-processing[a] were turned off, suggesting that, when in character, the actors are suppressing thoughts and awareness of themselves, allowing for a greater stream of conscious thoughts for their character and what their emotional processing must be like. Another considerable difference was seen in a region of the brain called the precuneus, found within the parietal lobe. The precuneus, which is responsible for integrating information about our environment and spatial awareness of our body, plays a crucial role in the process of character immersion, as it allows the actor to fully embody the character's perspective.

While the study showed apparent differences between the two tasks, the broad range of functions can make pinpointing what some brain activity means difficult. But it does suggest that there is a very active process during acting that increases focus, attention, and memory while at the same time reducing self-monitoring processes so that the actors can fully emerge themselves in someone else's perspective. This makes total sense and fits with the author's interpretation that actors rely on a highly developed empathy response. So, when we hear actors speak about their characters or performances, they speak from a heightened emotional intimacy and perspective.

This empathy, developed over time (a skill not restricted to actors, of course), allows them to connect with another person on a deeper level and bring that to their performance. When non-actors were put through the same tasks, they didn't show the same patterns in brain activity, giving more credence to the theory of a more developed emotional response than a typical person.

If you would like to watch a 2D animation showcasing an impressive study design looking at empathy in rats, and how the rats would free their friends from cages, scan the QR code below.

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[a] A broad and poorly defined term for understanding our own thoughts, feelings, and experiences; sometimes defined as 'the story of ourselves'.

To really understand the actor's brain, we need to look at a broader range of acting styles and characters. For example, how does the brain work during theatre acting with a live audience compared to a three-month cinematic production where an actor is fully immersed into the role, even off camera or between scenes? There are so many exciting questions, but to find the answers, we would need newer and more creative ways to answer them.

Well, funny you should conveniently mention that, exactly here, in the following sentence, because in 2022, a team of UK neuroscientists took on that challenge[165]. They wanted to bring a broader scope of brain measurements to these types of acting studies. They placed a wearable NIRS neuroimaging headset on six actors to measure brain oxygen when they were acting out scenes from Shakespeare (apparently, Shakespeare is the only available material for these types of studies). In a clever adaption of previous research studying other types of performers, the UK team combined measurements from the brain with others from the body. Motion capture of the actors' body movements, heart rate, and breathing rate were measured simultaneously, hoping the combined data would provide a more complete picture of what the actors were going through.

The team reported increased activity in the PFC and inferior frontal gyrus (IFG), which aligns with other published data and likely represents cognitive processes such as prediction or planning. This study not only paves the way for future research but also validates additional methods for investigating brain activity in moving (or acting) people. It fills a significant gap in the literature regarding cognitive processes in performing arts and offers hope for a more comprehensive understanding of neurological processes in real-world situations.

So, circling back to the theme of this book section: truth and lies. Lying is a complex and nuanced task that the brain must perform in addition to maintaining the truth. Resources dedicated to monitoring other people's responses add further cognitive demand. But these studies also reveal how, in general, we are honest people living by a moral compass. And if we ever want to set a new bearing on that compass, research also tells us that if we want to become better at lying or perhaps a better actor, we should focus more on engaging our empathy and emotional circuits. This not only helps us understand the neurological processes involved but also underscores the value of empathy in our interactions with others, even without the lying.

And....Cut!

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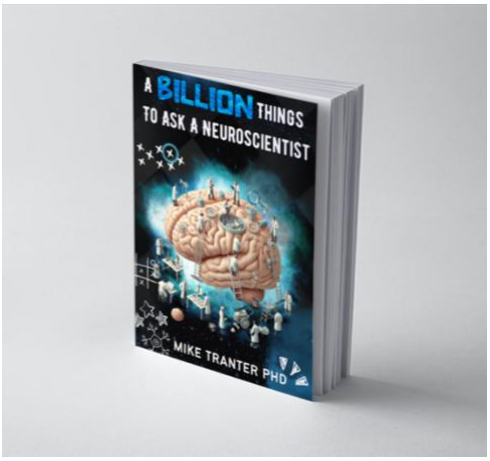

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This is just the beginning. Join me, and let's explore your brain in ways you've never imagined. Let's go!